



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,530	03/11/2005	Takashi Arakane	267416US0PCT	7317
22850 7590 09/25/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER CROUSE, BRETT ALAN				
ART UNIT 1794		PAPER NUMBER		
NOTIFICATION DATE 09/25/2008		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/527,530

Applicant(s)

ARAKANE ET AL.

Examiner

Brett A. Crouse

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 5-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4 and 8-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-850)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 20080208, 20070104, 20050311

DETAILED ACTION

Election/Restrictions

1. Applicant's election of, an iridium complex, with compound (K-10) as the ultimate species, a five member cyclic derivative comprising nitrogen, with compound B-7 as the ultimate species, and an alkali metal with lithium as the ultimate species, in the reply filed on 23 May 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 2, 5, 6 and 7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 23 May 2008. Claims 1, 3, 4, 8, 9 and 10 are under consideration.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, the claim requires a main component and reductive dopant both be present in the electron injection layer.

Claim 8 recites the material as a dopant. Is a second material required to be present in the interfacial layer to act as a “host” / “main component” material?

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3, 4 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al., US 2002/0048689, in view of Sakai et al., 6,486,601, with Liu et al., Synthetic Metals, (2002), Volume 128, Pages 211-214, as additional evidence.

Igarashi teaches:

Paragraph [0092], teaches electroluminescent device layers including light emitting, electron transport, electron injection and a protective layer between a pair of electrodes.

Paragraph [0097], teaches cathode materials and teaches the cathode supplies electrons to the electron injection layer. Examples of cathode materials include lithium and lithium / aluminum and an aluminum / lithium fluoride lamination structure.

Paragraph [0100], teaches compounds in the light emitting layer must also have the ability to transport the charges injected into the layer to move. Benzimidazoles are taught as suitable for the light emitting layer. A guest / host relationship to the material components is also taught.

Paragraphs [0006]-[0044], teach Ir complexes useful in the light emitting layer of an electroluminescent device.

Paragraph [0106], teaches imidazole derivatives are useful in the electron transport and electron injection layers.

Paragraph [0108], teaches materials for a protective layer between the cathode and electron injection layer. Suitable materials include LiF.

Igarashi does not recite:

Igarashi does not recite a reductive dopant in the electron injection layer.

Sakai teaches:

Column 2, lines 55-59, teach an electroluminescent device.

Column 6, line 63 through column 7, line 10, teaches an electron injection layer comprising an organic compound and reductive dopant. Preferable reductive dopants include lithium.

Column 8, line 63 through column 9, line 7, teach the use of reductive dopants with nitrogen containing heterocycles.

It would have been obvious to incorporate the reductive dopants of Sakai into the electron injection layer of Igarashi to reduce the drive voltage of the device of Igarashi as suggested by Sakai.

Liu:

Liu is included as evidence of the mechanism by which lithium derivatives function in aiding electron injection. Page 213 teaches that lithium derivative act by releasing free lithium which subsequently improves electron injection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mishima et al., US 2002/0096995 teaches an electroluminescent device with a guest / host light emitting layer comprising an iridium complex. The reference also teaches benzimidazole derivatives and their electron transporting properties.

Okada et al., US 6,461,747 and Okada et al., US 2002/0055014 teach an electroluminescent device with a guest / host light emitting layer comprising an iridium complex. The reference also teaches benzimidazole derivatives and their electron transporting properties. Attention is directed to column 11, line 30 opposite the related linkage of the selected benzimidazole species. The resulting compound of Okada when $m=2$ is a derivative of (B-1) of the instant invention.

Kamatani et al., US 2003/0068526, Kamatani et al., US 6,953,628 and Takiguchi et al., US 2003/0235712, are each cited as teaching various iridium complexes and their use as phosphorescent light emitting materials in electroluminescent devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald L. Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. C./
Examiner, Art Unit 1794

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794